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Abstract. Cloud computing is an evolution of computing technology and reflects a shift in the way it is delivered to businesses and individuals. Enterprises can significantly lower their cost of ownership, reduce time to value and faster adapt to changing needs in a globalized economy. Despite research and practice predict productivity increases and cost savings when migrating to the cloud one question remains unanswered: Does the adoption of cloud computing increase the market value of the firm? We try to answer this question by applying the event study methodology on companies that recently announced the deployment of cloud computing. Overall, we find significant positive abnormal returns. We find that investors specifically reward innovative and strategically motivated adoption of cloud computing. As a key implication of our results, we recommend in particular IT executives in large companies within the service industry to reassess their portfolio and foster the adoption of strategic and innovative cloud services.

Keywords: cloud computing, event study, business value of information technology, information systems, IT innovation

1 Introduction

Cloud computing is an evolution of how information technology is delivered to consumers and businesses [1], [2]. It allows companies to increase the scale and power of their IT, eliminate administrative effort, work across locations, devices and organizational boundaries and improve the speed at which IT can be accessed and deployed [1]. While recent studies predict high returns from migrating to the cloud [3], [4], it is a company's organizational grounding and specific setting that determines the success of an IT innovation adoption [5], [6]. In this study we examine five moderators that influence the impact of cloud computing adoption on firm value, namely firm size, industry sector, innovativeness, strategic intent and innovation timing.

From a corporate perspective, cloud computing represents a sourcing decision [2], [7]. In the past years effort was made to generally approach the question whether the adoption of new IT innovations pays off or not [6], [8–10]. Early studies in infor-

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mation systems addressed the so called productivity paradox which highlighted the discrepancy between advances in computing power and the relatively slow growth of productivity at the national or organizational level [11], [12]. A second debate was initiated by Carr [13] who argued that IT has no strategic impact on firm performance as IT is nowadays accessible and affordable to all. More recent research indicates that complementary resource investments and the effort to transform an organization have to be taken into account in order to estimate the business value of IT [6], [8]. Scholars have examined the characteristics of cloud computing, such as potential benefits [7], security issues [2] or business models [4]. Nevertheless, the highly pertinent question whether the markets recognize and value the deployment of cloud computing technology has remained unanswered. This study seeks to address this research gap. Our goal is to increase the understanding of the value of cloud computing for companies and examine under which conditions markets value cloud computing adoption. Therefore, our research question is: Does the adoption of cloud computing increase the market value of the firm?

We apply the event study methodology [14] to determine the impact of cloud computing adoption on the market value of a firm. Event studies enable researchers to measure changes in stock prices that can serve as an estimate for the effectiveness of the firm in foreseeing and adapting to changes in its market environment [9]. The method of event studies has a strong theoretical foundation and is widely applied in finance, management [15], accounting [16], marketing [17] and information systems.

Our study is important for two reasons. First, to our knowledge, we are the first to apply the event study methodology to investigate cloud computing adoption. Second, we examine the moderating effects of firm size, industry sector, innovativeness, investment timing and strategic intent of cloud computing adoption on firm value. We believe that these factors are particularly important in the context of cloud computing and will improve our understanding of the cloud computing's impact on firm performance - a central concern of IT managers. The remainder of this paper is structured as follows. In order to address our research question we will first clarify our view on cloud computing, review literature about how IT adoption can impact the market value of a firm and exemplify that the event study methodology provides an appropriate toolset for measuring the impact of IT. In chapter three, we clearly explain the event study methodology and our research design. The results are presented in chapter four. Chapter five discusses theoretical and practical implications.

2 Theoretical underpinnings

2.1 Our view on cloud computing

Cloud computing reflects an evolution of computer technology and is a dominant business model for delivering IT-based solutions [2]. With cloud computing enterprises have the ability to transform their product-centric application model into a globally distributed service-centric model [7]. We define cloud computing as a virtualization-based style of computing where IT resources are provided highly-scalable as a service over the Internet [2]. Three models for cloud-based services can be wrapped

around different layers of abstraction: Infrastructure-as-a-Service (IaaS), Platform-as-a-Service (PaaS) and Software-as-a-Service (SaaS) [18]. IaaS refers to the provision of hardware resources, PaaS provides a development environment and SaaS offers complete applications run in the cloud; managed and maintained by the provider. Indeed, the distinct building blocks of cloud computing, such as grid computing and virtualization, were available before cloud computing evolved to a buzzword. However, the functional interaction of each of them, combined with the availability of fast broadband access, makes business models focusing on infrastructure and platform services, as well as more complex software services first possible [7]. Generally speaking, cloud computing makes infinite resources available on demand, therefore eliminating the necessity to plan far ahead for provisioning and increasing a company's flexibility [1], [7]. The ability to pay for the use of computing resources on a short-term basis allows companies to obtain and release resources as needed. Costs for data centers and licenses which are only used a fraction of time, can be cut significantly. By relocating hardware resources to the cloud, enterprises also shift the business risk of failures and service interruptions to an infrastructure provider. These providers are usually better equipped for managing these risks [19]. In concrete, cloud computing can create potential to cut costs, increase productivity and to focus on the core business. However, cloud computing is not a silver bullet. It creates dependencies to the service provider and therefore causes security, privacy and availability risks [2], [7]. Moreover, cloud services available to date are highly standardized and allow little to no customization [2]. Therefore, a key concern for managers is "whether, when and how to innovate" [5] with cloud computing. IT innovation research addresses these questions in particular. An overview is given in the next section.

2.2 Impact of Cloud Computing Adoption

In literature, a variety of factors have been identified that influence the impact of information systems adoption. We believe that five contextual factors are particularly relevant to explain the impact of cloud computing adoption. In the following we explain and highlight why.

Small firms benefit most from cloud computing. Recent research argued that larger organizations have more diverse and complex facilities, which foster the adoption of a larger number of information technology innovations [20]. Moreover, loss due to unsuccessful innovations can more easily be overcome [20], [21]. However, it is proposed that cloud computing is especially suitable for small and medium enterprises [4], [7]. First, this is reasoned with the argument that up-front investments are significantly reduced, enabling smaller companies to adopt top-class technology that would otherwise have required own infrastructure [4]. Second, this kind of cost-effectiveness gives them the ability to concentrate on their core business, to increase process knowledge and thus reduce business risk. Third, smaller businesses are not subject to regulations as large or multinational enterprises are subject to. Firm size is an important moderator for the impact of cloud computing adoptions on firm value, because

cloud computing offers potential especially exploitable by small and medium enterprises.

First mover gain competitive advantage in industries. Innovativeness refers to the first use of a technology, product, service or IT application within a specific market segment [22]. Research suggests that innovative IT investments result in greater rewards for investors than follow-up investments, because first-movers may be able to obtain beneficial market positions, secure scarce resources and process knowledge until other firms follow up and the deployment of that technology becomes routine [6], [22], [23]. The innovativeness of a cloud computing announcement is an important moderator, because it reflects a main building block of competitive advantages.

Information-intensive industries have the most to gain. In terms of a contextual moderator, industry sector refers to the market space where a company's main activities take place. The role of IT differs between industries [24]. Especially in information-intensive industries innovative IT investments are critical to create and sustain competitive advantage [25]. Nevertheless, particular industries are subject to a highly regulated environment, where security breaches or data loss can have severe legal and reputational implications [25]. Other industries, such as energy, materials and industrials sector are characterized by a comparable simplicity of their value chains, the high degree of personal interaction in their business and a lower affinity for information technology in their labor pools. Industry sector is an important factor, because cloud computing enables information-intensive industries with potential to significantly reduce costs and to improve quality of information.

Areas of low strategic scope can be neglected. An IT investment itself can have different purposes, ranging from cutting costs by automating processes up to transforming businesses through enabling new business models. IT investments with a low strategic scope are not likely to lead to competitive advantages, because competitors will strive to follow and adopt [24]. However, with increasing strategic scope, IT investments were found to be more likely accompanied by complementary changes in firms' structure and culture, thus tremendously increasing decision making quality and speed [23], [24]. Because of the structural changes produced by these investments, the deploying companies are able to create competitive advantages and to produce superior returns from their business activities [24]. Strategic role is an important moderator for the impact of cloud computing on business value, because it reflects a strong signal of the firm's expected differential performance relative to other businesses.

The strategic value of cloud computing diminishes over time. Time effects describe the diminishing potential to gain competitive advantage by adopting technology over time. In the resource-based view, even if the use of a new technology enables a firm to reduce costs or increase productivity, it may not provide a long term compet-

itive advantage if other firms can duplicate these benefits with little effort [23]. In either case, early adoption can be beneficial, because it provides cost advantages until other firms follow, allows gaining market share and create switching costs for customers using products or services which build on the new technology [26]. Thus, it is important to take investment timing into account. Time effects are an important factor for the investigation of cloud computing impacts, because the strategic value of cloud computing diminishes over time.

2.3 Previous Research on the Impact of IT Adoption

From a methodological point of view, event studies are theoretically well-founded [14], [27] and comparably easy to implement, because the only data necessary are a publicly traded company's stock prices and event dates. Event studies build on the semi strong form of the market efficiency hypotheses, which states that the market price fully reflects all public information about a stock an investor has access to [14], [27]. The event study evaluates the impact of an event, such as the arrival of unanticipated information to investors, on the returns of a stock and thus on the market value of a firm itself. An investor will incorporate potential competitive advantages and growth options received from IT investments and adjust his value perception of a firm [47]. In order to deepen the understanding of previously examined relationships, we conducted a systematic literature review focusing on event studies that investigated our cloud-specific factors firm size, industry sector, timing, innovativeness and strategic role.

Table 1. Literature review of event studies on IT investments.

Reference	Moderators investigated					Type of Announcement
	Firm Size	Industry Sector	Innovativeness	Strategic Role	Investment Timing	
This Study	*	*	*	*	*	
[29]		ns				IT Infrastructure and Applications
[24]		ns		*		IT Infrastructure and Applications
[22]	*		*			IT Infrastructure and Applications
[30]			*			E-Commerce
[31]	*					-
[21]	*					ERP
[32]		*			*	General IT Investments
[33]	*	ns			*	IT Infrastructure and Applications
[34]	*	*				ASP
[35]	*	*			*	IT Infrastructure and Applications
[36]	*	*				General IT Investments
[20]	ns	*				ERP
[37]					*	Enterprise Application Integration
[38]	*					Software-as-a-Service
[39]		*				E-Commerce

* = found to be significant, ns = not significant

As a selection criterion, the publication had to investigate at least two of the five defined moderators. Overall, 15 papers were found. We used a concept matrix [40] to structure the findings and extended it with data about the investigated type of announcement (cf. Table 1). Manifold kinds of event studies were published, including the examination IT infrastructure investments [29], ERP implementations [20], CIO positions [41] and IT outsourcing decisions [42].

Our study advances previous research for three reasons. First, none of the reviewed studies measured the impact of cloud computing investments on firm value. Second, previous studies show contradicting findings regarding the role of the firm size and industry sector which our study likes to resolve for the context of cloud computing. Third, our study is the first to investigate the established moderating factors of firm size, industry sector, innovativeness, strategic role and investment timing in one study.

3 Methodological foundation and research design

3.1 Derivation of abnormal returns and event measurement

Event studies are based on the assumption that the magnitude of the price change in the time frame an event is noticed by the market is the measure of the value of this information. Consequently, we define *normal returns* as the average movement of stock prices and *abnormal returns* as the return of an individual stock that differs from the market movements. Our approach followed the widespread approach of estimating the market model of each firm and then calculating abnormal returns [17]. There, the rate of return on the share price of firm I on day t is expressed as

$$R_{it} = \alpha + \beta_i R_{mt} + \epsilon_{it}\,, \tag{1}$$

where R_{it} is the rate of return on the share i on day t, R_{mt} the market rate of return, i.e. the average return of the S&P500 on day t,α the time invariant effect of firm i on its own return, β the systematic risk of stock I and ϵ the error term with $E(\epsilon_{it}) = 0$.

The abnormal returns (AR) can then be derived by subtracting the expected returns of Equation (1) from the actual returns; in concrete

$$AR_{it} = R_{it} - E[R_{it}] \tag{2}$$

where AR_{it} is the abnormal return for stock, R_{it} the rate of return on the share i on day t and $E[R_{it}]$ the expected return for stock i on day t. We compute standardized abnormal returns

$$SAR_{it} = \mathrm{AR_{it}} / \mathrm{SD}_{it} \quad \text{with} \quad SD_{it} = \{S_i^2 * [1 + \frac{1}{T(R_{mt}-R_m)^2} * \frac{1}{\sum_{t=1}^{T}(R_{mt}-R_m)^2}]\}^{0,5} \tag{3}$$

where S^2 represents the residual variance from the market model for stock i and R_m being the mean return of the market portfolio. The standardized abnormal returns can then be cumulated over the respective event window (CAR) and averaged for a concrete sample of n firms (ACAR):

$$CAR_i = \frac{1}{\sqrt{k}} \sum_{t=1}^{k} SAR_{it} \quad \text{and} \quad \text{AC}AR_i = \frac{1}{n} \sum_{f=1}^{k} CAR \tag{4}$$

A crucial part in conducting event studies is the choice of appropriate parameters for calculating abnormal returns (see Figure 1) [15]. In general, the event window should be chosen long enough to capture the effect, but short enough to exclude confounding events. If a one-day period is used, it is not clear when the market was informed by the event and whether the market was informed before the close of the market on the prior trading day or not [33]. Therefore, it is a common practice to expand the event window to one day before the event and ending one day after the event [24], [29], [32], [34]. Longer event windows significantly reduce the validity of the test statistic, leading to false conclusions about the significance [15]. For these reasons and following prior studies we use an event window of [-1, +1] to capture the effects of cloud computing announcements on a company's market value.

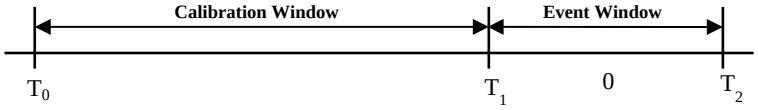

Fig. 1. Time line terminology of an event study.

Second, the calibration window is used to project the normal returns for a stock through a regression analysis. It is typical that calibration period is located in the time before the event and does not overlap with the event window. Contemporary research recommends setting the calibration period wide enough to capture the relationship between the stock and the market, but short enough to apply to the firm today [16]. In research, the length of the calibration window is set differently (see Figure 1); it typically ranges between 100 and 300 days in case of daily studies [33]. In order to increase stability and expressiveness of results we decided to use a calibration period of 255 days prior to the event window to estimate the expected return.

3.2 Sample Selection

Our sample consists of firms which are constituents of the S&P 500 Composite index as of March, 2012[1]. The event dates of the announcements were identified from LexisNexis Academic Database by conducting searches using the keywords 'cloud computing', 'Software as a Service' (resp. 'SaaS' or 'Software-as-a-Service'), 'Infrastructure as a Service' (resp. 'IaaS' or 'Infrastructure-as-a-Service') and 'Platform as a service' (resp. 'PaaS' or 'Platform-as-a-Service') along with the particular company's name OR ticker symbol. The initial sample size was 119. When examining the results we ensured that the deployed cloud service was of the nature of cloud computing, i.e. being offered as a highly scalable service over the internet, using a cloud infrastructure entirely managed by the provider and being accessed through a web interface [2] This way, 54 announcements were discarded. Near the particular announcement date (t = -3, +3) we checked for confounding events such as mergers, stock splits or ana-

[1] extracted from http://www.standardandpoors.com, accessed 13. March 2012.

lyst forecasts that can influence the stock price. Stocks having an average price of less than 1$ or a history shorter than 255 trading days were also dropped, as price changes in these stocks tend to be unrepresentative of the market itself [15], [39]. Our final sample consists of 65 announcements spanning from January 2007 to June 2012, which is an appropriate basis for conducting the event study methodology [15]. The corresponding daily stock returns were retrieved from DataStream database. We also extracted the firms' industry sectors, total assets and a short description of the business model. In order to categorize the strategic role and innovativeness, three students with majors in IS were hired and trained. They were provided with a description of the particular company's business activities, the announcement and a description of the deployed technology. In coding the strategic intent, Krippendorff's Alpha was 0,78; regarding the coding of innovativeness Krippendorff's Alpha was 0,85.

3.3 Measurement of Factors

In order to make our results comparable with previous studies in information systems research, we analyzed how the factors of firm size, industry, innovativeness, strategic intent and investment timing are measured in related literature. We decided to stick to the measurements listed in Table 2, as they were applied by most of the studies.

Table 2. Measurement of moderating factors in related literature.

Factor	Measurement	References
Firm Size	Total Assets in $ in the corresponding year	[24], [43], [33]
Industry	Global industry classification index, Service and Manufacturing industry	[22], [43], [34], [33]
Innovativeness	Innovative and non-innovative	[22]
Strategic Intent	Automating, Informating and Transforming	[24], [43], [41]
Timing	By single years	[34], [43]

4 Results

Table 3 presents a summary of standardized cumulative abnormal returns for the 65 cloud computing adoption announcements and the test for significance. In total, the overall standardized ACAR over the 3-day event window of all firms making an adoption announcement of cloud computing was found to be positive and significant.

Table 3. Abnormal returns to all announcements of cloud computing adoption.

	n	ACAR	Z-value
Overall return [-1, +1]	65	0,41	**3,32*****

*p < 0.05, **p<0.01, ***p<0.001, ns = not significant.

In order to examine whether firm size is correlated with abnormal returns when companies announce cloud computing adoption, the sample was coded into three catego-

ries according to the magnitude of the total assets variable. The results are listed in Table 4. We found that cloud computing announcements of large firms lead to excess stock returns and were positive and significant (see Table 4).

Table 4. Abnormal returns to cloud computing adoption announcements by firm size.

Size	**n**	**ACAR**	**Z-value**
Small	22	0,21	$0,94^{ns}$
Medium	19	0,37	$1,61^{ns}$
Large	24	0,77	$\mathbf{3,79}^{***}$

*p < 0.05, **p<0.01, ***p<0.001, ns = not significant.

For examining industry sector effects, the sample was divided into two clusters: one contains firms belonging to the service sector and the other one with manufacturing firms. For service firms, the overall ACAR was positive and significant (see Table 5).

Table 5. Abnormal returns to cloud computing adoption announcements by industry cluster.

Industry Cluster	**n**	**ACAR**	**Z-value**
Services	43	0,63	$\mathbf{4,14}^{***}$
Manufacturing	22	-0,01	$-0,03^{ns}$

*p < 0.05, **p<0.01, ***p<0.001, ns = not significant.

To further investigate the industry effect, we grouped the sample along the particular firm's industry segment provided by the S&P500 index; in this case the Global Industry Classification Standard (GICS)[2]. Table 6 summarizes the ACAR for each sector over the [-1, +1] period. We found that stocks of firms in the financials, health care and information sectors yielded positive abnormal returns and were significant.

Table 6. Abnormal returns to cloud computing announcements for industry sectors.

Industry sector	**n**	**ACAR**	**Z-value**
Consumer Discretionary	13	0,09	$0,31^{ns}$
Consumer Staples	9	0,23	$0,69^{ns}$
Financials	10	0,84	$\mathbf{2,66}^{**}$
Industrials	11	-0,08	$-0,27^{ns}$
Information Technology	5	1,40	$\mathbf{3,13}^{***}$
Health Care	8	0,75	$\mathbf{2,11}^{*}$
Others	< 5	-0,08	$-0,08^{ns}$

*p < 0.05, **p<0.01, ***p<0.001, ns = not significant.

[2] A description of the industry segments can be obtained via www.standardandpoors.com/indices/gics/en/us .

We also categorized our sample into cloud computing adoptions that were automating, informating or transforming. Automating and informating adoptions were found to be statistically significant and yielding abnormal returns (see Table 7).

Table 7. Abnormal returns to cloud computing announcements based on strategic role.

Strategic role	n	ACAR	Z-value
Automate	36	0,39	**2,37****
Informate	24	0,55	**2,69****
Transform	5	0,75	1,68^{ns}

*p < 0.05, **p<0.01, ***p<0.001, ns = not significant.

Categorizing the announcements into innovative and non-innovative cloud computing adoptions yielded significant positive abnormal returns for innovative adoptions (see Table 8).

Table 8. Abnormal returns to cloud computing investments by innovativeness.

Innovativeness	n	ACAR	Z-value
Innovative	21	0,86	**4,02*****
Non-innovative	44	0,29	1,89^{ns}

*p < 0.05, **p<0.01, ***p<0.001, ns = not significant.

In addition, we examined time lag effects and found that cloud computing announcements yielded significant positive abnormal returns in the years 2008-2010, but were not significant in the years 2011 and 2012 (see Table 9).

Table 9. Abnormal returns to cloud computing announcements by year.

Year	n	ACAR	Z-value
2007	5	0,02	0,05^{ns}
2008	15	0,66	**2,54****
2009	12	0,82	**2,85****
2010	17	0,62	**2,55****
2011	14	-0,01	-0,06^{ns}
2012	2	-1,37	-1,94^{ns}

*p < 0.05, **p<0.01, ***p<0.001, ns = not significant.

5 Discussion

5.1 Theoretical Contribution

The objective of this study is to develop an understanding of the value of cloud computing adoption. We want to highlight two major theoretical contributions. First, to

our knowledge, we are the first to apply the event study methodology on cloud computing adoption. The method allows us to evaluate the impact of a cloud computing adoption announcement on the returns of a stock and thus on the market value of a firm itself. Second, we investigate the role of firm size, industry sector, innovativeness, timing and strategic intent for cloud computing adoption. We show that these factors are particularly important in the context of cloud computing and improve our understanding of cloud computing's impact on firm performance. Overall, we find significant abnormal returns associated with cloud computing adoption announcements. Our results indicate that investors take different characteristics of an enterprise and its environment into account when evaluating cloud computing announcements. In the following, the implications of our findings are discussed in detail.

Significant abnormal returns were found for enterprises in the services sector, which confirms the results of previous event studies on IT investments [34]. It is interesting to see that a more granular analysis of the industry classification yielded significant abnormal returns for the financial, health care and information technology sector. Each of them can be described as an information-intensive sector; either handling intangible products (i.e. insurance policies, financial products or software services) or highly specific tangible products (i.e. medical equipment, semiconductors) that require customer intimacy, a large base of information workers and high quality standards. Our results indicate that investors perceive cloud computing technology as a main lever to improve the performance of a firm in the above named sectors. We could not observe abnormal returns for announcements of firms in the industrial, material and utility sectors. In our view, this can be explained with the comparably simple value chains, the high degree of personal interaction in their business and a lower affinity for information technology in their labor pools.

Moreover, we found excess returns for announcements categorized as innovative adoptions; follow-up investments were not found to be significant. The innovative deployment of IT involves weighing choices that are best fits to a firm's circumstances. Such a behavior shows investors a mindful [5] and leading management of the enterprise. Indeed, an organization following other firms adopting cloud computing can benefit from well-tested migration practices. Nevertheless, the sole pursuit of best practices should be regarded as commonplace and not leading to sustained competitive advantage. This confirms evidence [26] that investors reward a company's decision to invest in innovative technology.

Contrary to our expectations and previous findings in event study literature, however, cloud computing announcements of small firms did not create significant abnormal returns. Indeed, we hypothesized that cloud computing is especially profitable for small and medium enterprises, because it eliminates up-front investments and can be deployed on demand. Nevertheless, it requires extensive know-how to identify and evaluate opportunities for cloud computing adoption. Regarding cloud computing adoption as a sourcing decision, it is also critical to manage relationships with new outsourcing partners. Large firms have better access to such resources and deeper experiences in managing relationships with vendors. Seen in this light, our results indicate that investors perceive large firms to be advantageously positioned when adopting cloud computing.

Finally, our results show that cloud computing adoption led to abnormal returns in the years 2008-2010, but did not yield excess returns in the following years 2011 and 2012. In our view, this implies that cloud computing was seen as an outstanding action of enterprises when it was relatively new to the market. One can argue that this indicates that investors perceived it as commonplace when a company migrated to the cloud in 2011 and 2012. In our view, this also supports the thesis of Carr [13], who argued for a diminishing strategic potential of IT over time. Accordingly, managers should focus on managing risks rather than gaining competitive advantage through IT investments in the future. However, it is unclear whether cloud computing reduces this risk. On the one hand a migration to the cloud reflects a loss of control over data, infrastructure and know-how. On the other hand, due to its distributed nature, cloud computing can also minimize the risk of service failures or interruptions.

5.2 Limitations and Suggestions for Future Research

However, the results of this study must also be seen in light of its limitations. Even though our effort focused on isolating IT investment announcements from other firm news, it is possible that parts of the results are driven by other events not covered in press releases. Nevertheless, we expect that such an effect randomizes across the sample firms and has neither a positive nor negative effect on our results. Second, even though our choice of parameters for conducting the event study methodology was chosen in line with previous studies in IS research, our results can be biased by parametric issues. Considering our results, we would encourage future research to further investigate cloud computing impacts on firm value using a different methodology.

5.3 Practical Implications

From a practical perspective, we would recommend firms to identify both the firm and industry-specific role of IT and progress of digitization. We encourage managers to identify and exploit the potential for innovative investments in cloud computing; innovative in terms of being a first-mover among competitors. Finally, we recommend executives of large companies within the service industry to reassess their IT portfolio and foster the adoption of strategic and innovative cloud services.

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